

CEROPEGIA CUMINGIANA DECNE (ASCLEPIADACEAE)

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Summary

The recognition of subspecies in *Ceropegia cumingiana* Decne is unwarranted. An illustrated taxonomic account of *C. cumingiana* and notes on habitat, distribution, ecology, affinities, variation, conservation status and ethnobotanical use are provided. A lectotype is chosen for *C. perforata* N.E. Br.

Introduction

Species of *Ceropegia* L. are widely distributed in Africa, Arabia, Pakistan, India and south-east Asia with the greatest concentration occurring in southern Africa (Dyer 1980, 1983) and peninsular India (Ansari 1984).

Ceropegia cumingiana Decne was first described from material collected in the Philippine Islands by Cuming (Decaisne 1844). Huber (1957), in his monograph of the genus, recognised one taxon (*C. cumingiana* subsp. *horsfieldiana* (Miq.) H. Huber) for Java, Lesser Sunda Islands, Celebes, New Guinea and Australia, and one taxon (*C. cumingiana* subsp. *cumingiana*) for the Philippine Islands. This paper provides a detailed description of *C. cumingiana*. The nomenclature and infraspecific taxonomy of the species and its synonyms are revised.

Taxonomic Treatment

- Ceropegia cumingiana*** Decne in DC., Prod. 8: 643 (1844). **Type:** The Philippines. Luzón: Calauang, Province of Laguna [*vide* Merrill 1915], *H. Cuming* 447 (holo: G(3 sheets, photo at BRI!); iso: BM,K(2 sheets, photo at BRI!),L(2 sheets),P(photo BRI!)).
Hook., Bot. Mag. 74: t. 4349 (1848); Miq., Fl. Ned. Ind. 2: 528 (1856); F. Muell., Fragm. 5: 159-160 (1866); Benth., Fl. austral. 4: 348 (1869); Fernandez-Villar in Blanco, Fl. Filip., ed. 3, t. 313 (1880); F. Muell., Syst. census Austral. pl. 94 (1882); F. Muell., Second syst. census Austral. pl. 1: 159 (1889); K. Schum., Fl. Kais. Wilh. Land 110 (1889); Bailey, Queensl. fl. 3: 1015 (1900); K. Schum. & Lauterb., Fl. Schutzgeb. Südsee 508 (1901); Schltr., Nachträge Fl. Schutzgeb. Südsee 354 (1905); Bailey, Compr. cat. Queensl. pl. 332 (1913); Merrill, Enum. Philipp. fl. pl. 3: 343-344 (1923); Elmer, Leaf. Philipp. Bot. 10: 3548 (1938); Tsiang, Sunyatsenia 4: 91 (1939); H. Huber, Mem. Soc. Brot. 12: 56-58 (1957); Jones & Gray, Austral. Climbing pl. 88 (1976).
- C. horsfieldiana* Miq., Fl. Ned. Ind. 2: 528 (1856); *C. cumingiana* subsp. *horsfieldiana* (Miq.) H. Huber, Mem. Soc. Brot. 12: 56 (1957). **Type:** Indonesia. Java. Soerakarta, 1802-1818, *T. Horsfield* s.n. (syn: K(photo BRI!); Bali, *Zollinger* 1013 (syn: P(photo at BRI!)).
Schltr., Nachträge Fl. Schutzgeb. Südsee 354 (1905); Tsiang, Sunyatsenia 4: 90 (1939).
- C. curviflora* Hassk., Flora 40: 102 (1857). **Type:** Indonesia. Bali. *Lobb* s.n. (holo: L!).
Tsiang, Sunyatsenia 4: 290 (1940); Bakhuizen van den Brink, Blumea 6: 373 (1950); Backer & Bakhuizen van den Brink, Fl. Java 2: 257-258 (1965).
- C. obtusiloba* Fawcett in Forbes, Nat. Wand. in East Archip. 511 (1885). **Type:** Indonesia. Timor. [Kailakuk in the Kingdom of Bibicuçu], [26-28 Apr 1883], *Forbes* 3801 (holo: BM(photo BRI!)).

- C. perforata* N.E. Br., Bull. Misc. Inform. 1901: 141 (1901). **Type:** Introduced from New Guinea, Hort. F. Sander & Co., 13 August 1898 (lecto (designated here): K(photo BRI!)).
- C. papuana* Schltr., Bot. Jahrb. Syst. 50: 163 (1914). **Type:** New Guinea. "Kaiser Wilhelmsland", March 1887, *M. Hollrung* 659 (isosyn: MEL!); Im Strandgebüsch bei Konstantinshafen, March 1902, *R. Schlechter* 14300 (syn: B †); Zwischen Gesträuch hochsteigend in dem Sekundärwald am Djamu, December 1907, *R. Schlechter* 16969 (syn: B †).
Jones & Gray, Climbing pl. Austral. 177, 193 (1988).
- C. borneensis* Merr., Philipp. Jour. Sci. 13: 120 (1918). **Type:** Malaysia. Sabah (North Borneo), *Clement* 9810 (n.v.).
- C. merrillii* Schltr., Feddes, Repert. Spec. Nov. Regni. 13: 565 (1915); *C. cumingiana* subsp. *cumingiana* forma *merrillii* (Schltr.) H. Huber, Mem. Soc. Brot. 12: 58 (1957). **Type:** The Philippines. Luzón, Bangued ("Benguet") distr., Bued River, Oct–Nov 1905, *E.D. Merrill* 4863 (holo: K(photo BRI!)).
Merrill, Enum. Philipp. fl. pl. 3: 344 (1923).

Perennial herb, sap clear. Rootstock a cluster of white, fleshy, fusiform roots; each root 1–3 mm diameter, up to 15 cm long. Stems glabrous, twining, succulent, aerial parts pale green, deciduous, to 5 mm diameter; internode length up to 15 cm. Leaves ovate-elliptic, base rounded to cordate, tip acute; 3 or 4 main vein pairs, 2 or 3 minor vein pairs; 4 extrafloral nectaries at lamina base; 20–130 mm long, 15–70 mm wide; petiole 25–40 mm long, 1–2 mm diameter; pale green, glabrous. Flowers borne near apex of stem, arising at nodes, displaced to position between petioles of leaf pair; 1–20-flowered, on glabrous, pale green peduncle to 80 mm long, 1 mm diameter. Pedicels 15–22 mm long, 1.5 mm diameter, glabrous, pale green or slightly mottled with purple. Sepals linear-lanceolate, acute-tipped, glabrous, 3–3.5 mm long, 1 mm wide; 2 or 3 glands at base of confluence of each pair of lobes. Corolla tube 12–20 mm long, 3–6 mm diameter, slightly inflated at base; exterior glabrous, tube with horizontal colour bands rising vertically from base, firstly of cream, then purple-black, then cream with deep purple-red flecking or overall cream with pale purple blotches; interior with white, uniseriate retrorse trichomes in inflated basal part, pale purple-red or cream. Corolla lobes connate near tips, replicate where margins free, 6–15 mm wide; individual lobes 7–11 mm long, 2–6 mm wide, glabrous, with horizontal colour bands rising vertically from base, firstly of cream, then yellow and tips red or alternatively firstly purple-red, then yellow, then brown-red. Corona 3.5–4 mm long, 3.5–5 mm diameter, forming 5 cupular pockets around staminal column. Outer corona 2.5 mm long, 3.5–5 mm diameter; each lobe bifid into erect teeth, c. 1 mm long, 1 mm wide with white, uniseriate cilia 0.5 mm long, either irregularly striped with purple and yellow or yellow at base with purple-red tips. Inner corona 1.5–2.5 mm long, 1–1.5 mm wide, individual lobes cylindrical, 0.5 mm diameter; tips rugose, with few scattered uniseriate setae at tips; yellow to yellow-cream; lobes fused to base of anthers for lower 1 mm. Staminal column 2–2.5 mm long, 1.5–2 mm diameter; lobes spatulate, 0.5 mm long × 0.5 mm wide; anther-wings 0.5–0.75 mm long. Style head 1–1.5 mm diameter. Ovaries c. 2 mm long, c. 1.5 mm wide. Pollinia globose, inner top margin pellucid for 0.2 mm, yellow, 0.35–0.4 mm long, 0.29–0.32 mm wide. Corpusculum oblong, tan-brown, 0.33–0.35 mm long, 0.15 mm wide. Caudicles translucent, 0.15 mm long, 0.12 mm wide. Follicles fusiform, green and purple mottled, paired or single, to 21 cm long, 3–5 mm diameter. Seed oblong, tan-brown, 14 mm long, 2 mm wide; coma white, up to 60 mm long. **Fig. 1.**

Selected specimens: The Philippines. Luzón. Bosoboso, Province of Rizal, Sep 1904, Aherm's collector [*Ramos*], Forestry Bureau No. 1854 [on mixed sheet with *Cuming* 447 & *Vidal* 1601] (K(photo BRI!)); Indonesia. Java. Tambora, Kangean, Mar 1919, *Backer* 27541 (L); Tempoeran, SE of Semarang, Apr 1910, *van Leeuwen* (L); Pekalongan, Bosch district, Apr 1920, *Beumee* 5144 (L); Kedoc, Apr 1938, *Brinkman* 865a (L); Tanimbar Is, Yamdena, Malentian, Apr 1956, v. *Borssum Waalkes* 3322 (L). Sulawesi (Celebes). Palu Is, Apr 1957, *Loeters* 1302 (L); Flores Is, West of Nunang-Paku, Feb 1967, *Schmutz* 1304 (L). Timor. banks of Noil Fatoe, Apr 1929, *Walsh* 208 (L). Papua New Guinea. MOROBE DISTRICT: Bulolo Valley, Jun 1955, *Floyd & Havel* NGF7458 (BRI, LAE); Wau–Salamaua Road, Kaisenik, Upper Bulolo Valley, Dec 1955, *Womersley & Millar* NGF7828 (LAE); Umi River Bridge, 6°15'S, 146°15'E, *van Royen* NGF16061 (BRI, CANB, LAE); McAdam National Park, side of Wau–Bulolo Road, Mar 1978, *Verdcourt* 5116 (LAE). CENTRAL DISTRICT: between Maipa & Mankina Villages, Kairuku subdistrict, Sep 1962, *Darbyshire* 957 (CANB). NORTHERN DISTRICT: Kokoda, 8°53'S, 147°44'E, Mar 1936, *Carr* 16260 (CANB). Australia. COOK DISTRICT: Lockerbie, 10 miles [16 km] WSW of Somerset, 1948, *Brass* 18396 (A, BRI, CANB, L); 2.7 km past Lockerbie HS site on Cape York rd, 10°47'S, 142°29'E, Jun 1988, *Forster* 4420 & *Liddle* (BRI); Weipa, Lake Patricia, 12°39'S, 141°50'E, Apr 1988, *Forster* 4075, *Liddle & Bostock* (BOL, BRI*); Lamond Hill, Iron Range, 12°43'S, 143°18'E, Apr 1988, *Forster* 4208 & *Liddle* (BRI); McIlwraith Range, 13°52'S, 143°17'E, Apr 1988, *Liddle* [AQ408494] (BRI*); Mt White near Coen, Jul 1949, *Flecker*

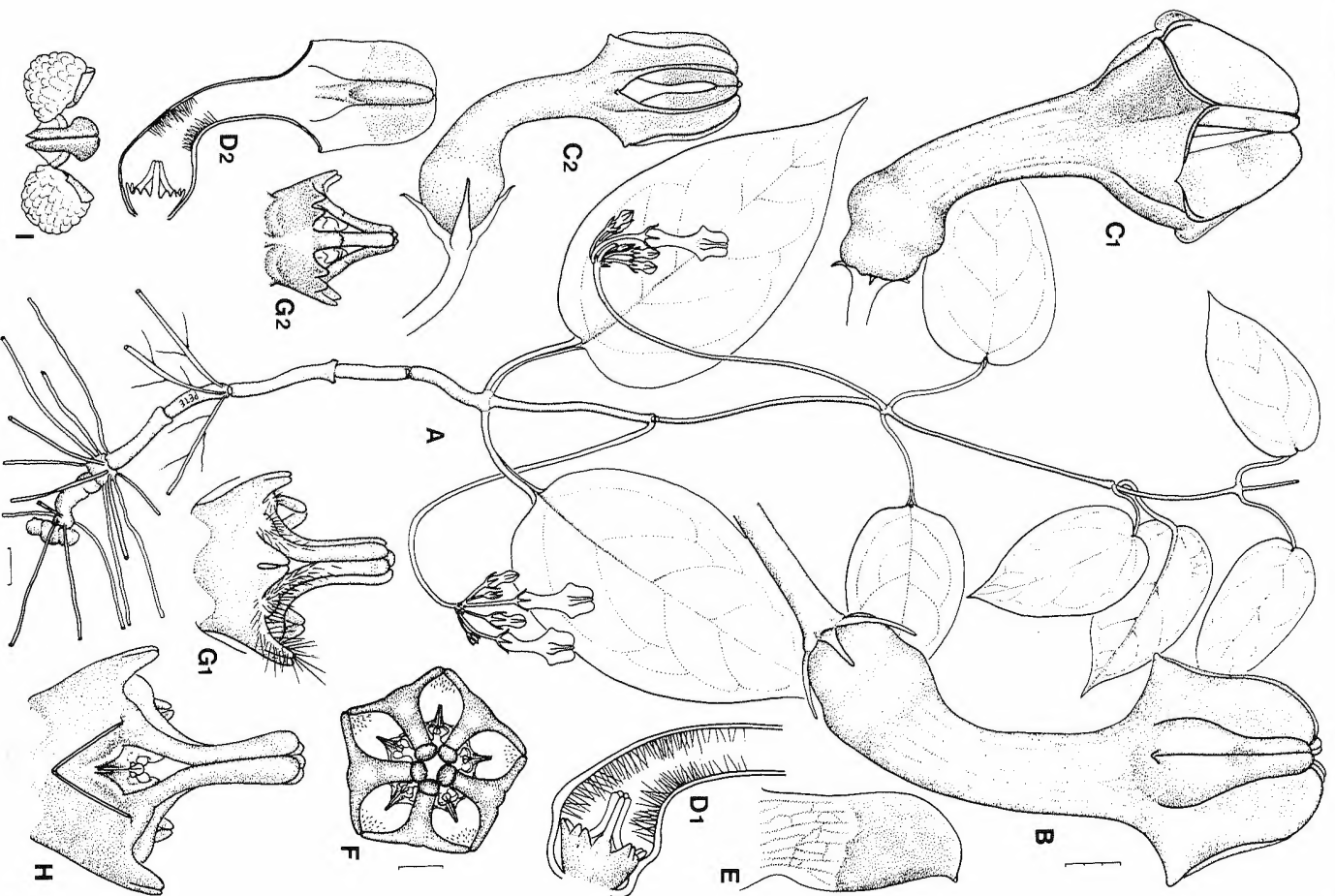


Fig. 1. *Ceropegia cumingiana*: A, plant (scale 1 cm). B, bud (scale 3 mm). C, side view of corolla (scale 3 mm). D, side view of dissected corolla. E, corolla-lobe (scale 3 mm). F, face view of staminal column (scale 1 mm). G, side view of staminal column (scale 1 mm). H, side view of dissected staminal column (scale as B = 1 mm). I, pollinarium (scale of B = 0.25 mm). A,B,D,E,F,G,H,I, Forster et al. 4075; C₁, Liddle AQ440535; C₂, D₁, G₁, Gray 212 (Very small flowered form).

N.Q.N.C.13286 (BRI); Stannary Hills, 17°18'S, 145°13'E, Jan 1977, *Gray* 212 (QRS*). (* indicates material preserved in spirit) Specimens from 35 localities examined.

Distribution, habitat and ecology: *C. cumingiana* is known from Bali in the south-west, Borneo in the north-west, Papua New Guinea in the east, the Phillipine Islands in the north to northern Queensland in Australia in the south. It occurs in deciduous microphyll and notophyll vine forests in northern Queensland and Papua New Guinea.

At Lake Patricia (*Forster* 4075 *et al.*) and Lockerbie (*Forster* 4420 & *Liddle*) the soil is a mixture of fine sand and humus while at Lamond Hill (*Forster* 4208 & *Liddle*) it is of volcanic origin and red in colour. The species is probably pollinated by small drosophilid flies of which several have been found inside the flowers of *Gray* 212. Larvae of a *Danaus* sp. (probably either *D. plexippus plexippus* (L.) or *D. chrysippus petilia* (Stoll)) (Nymphalidae) were observed feeding on leaves of *C. cumingiana* at Lake Patricia.

Notes: The locality for Cuming's type collection of *C. cumingiana* is taken from the listing of Merrill (1915).

There are two sheets at K labelled as 'Type Specimen' for *C. perforata*. One has mainly juvenile leaves, no flowers, a red printed 'Type Specimen' label and an annotation in N.E. Brown's hand stating 'Ceropegia perforata, N.E. Br.! Hort. F. Sander & Co. Dec 20. 1897 Imported from New Guinea'. The other consists of mature leaves with four pressed cymes of flowers and is labelled in N.E. Brown's hand 'Ceropegia perforata, N.E. Br.! in Kew Bull. 1901, p. 141 Type Specimen! Hort. F. Sander & Co. Aug. 13. 1898 Introduced from New Guinea N. E. Brown'. Brown (1901) did not specify a date for his type and hence the latter specimen is designated here.

The live or pickled material examined (in particular *Gray* 212, *Forster* 4075 *et al.*, *Liddle* AQ408494 and *Kitchen* AQ408495) demonstrates the wide variation possible both in the size of the flowers and degree of pubescence on floral parts in this taxon. Specimens of *Kitchen* AQ408495 (cultivated at Tolga, but collected at Lockerbie Scrub) were observed to produce flowers of different sizes in relation to the general moisture content of its environment (G. Sankowsky, pers. comm. 1988). A plant of *Gray* 212 had flowers that often lacked the small hairs on the corolla lobes.

Subspecies *horsfieldiana* was distinguished from subsp. *cumingiana* by the generally longer corolla lobes, pubescent interior lower portion of corolla tube and the pubescent interior of corona (Huber 1957). Both flower colour and the presence or absence of hairs on various floral parts are very variable in genera like *Ceropegia* (Field & Collette 1984). Hence in this account, no subspecies are recognised for *C. cumingiana*.

C. cumingiana was placed in a Section *Hylopegia* H. Huber together with *C. lucida* Wallich from China, Thailand, Malaysia, Bangladesh, Burma and north-east India (Huber 1957). Both species have entirely glabrous vegetative parts, a feature shared with *C. thwaitesii* Hook., *C. elegans* Wall. and *C. madagascariensis* Decne of Sect. *Janthina* Huber (from which section they are excluded by the less prominent basal inflation of the corolla-tube). All these species have very slender, glabrous stems, large, glabrous leaves and a slender, glabrous peduncle bearing many flowers. All of these taxa have essentially the same coronal structure: the outer lobes are bifid into erect, pilose teeth (long, slender lobules – *C. madagascariensis*) and the inner lobes, usually somewhat clavate towards their tips, are connate in the centre above the stigmatic head. This corona structure is shared with a wider group of species including the complex surrounding *C. longifolia* Wall.

Huber (1957) separated *C. cumingiana* and *C. lucida* on the different shapes of the corolla-lobes (strongly attenuated, often spatulate at apices in the latter; ovate, oblong or obovate in the former). Unfortunately spirit or live material of *C. lucida* is lacking for a more detailed comparison of the respective coronas. The outer corona of *C. cumingiana* forms a rather deeper cup than is customary in any of the above-mentioned taxa except for *C. longifolia* where both a shallow outer corona and a very much deeper structure even than that in *C. cumingiana* sometimes occurs in subsp. *sinensis* Huber.

Conservation status: *C. cumingiana* is widely distributed and the relatively few collections present in herbaria are more a reflection of inadequate collecting than of rarity. The species is not rare, endangered or vulnerable at present.

Ethnobotanical use: Bailey (1913) records *C. cumingiana* as being used as a yam by the natives along the Batavia [Wenlock] River, Queensland. They called the plant "Anareata".

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